# Greatest Common Factor Using Lists

Jen Kershaw

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**AUTHOR**
Jen Kershaw

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CONCEPT **1**            # Greatest Common Factor Using Lists

Here you'll learn to find the greatest common factors of numbers by using lists.

Have you ever been part of a big basketball tournaments? Take a look at this dilemma.



The sixth grade teachers have decided to have a big basketball tournament as part of the sixth grade social. The sixth graders in clusters 6A and 6B love basketball, and when the agenda is announced, all of the students are very excited. The biggest question is how many teams to divide the students from each cluster into. The teachers want to have the same number of teams, otherwise it will be difficult to have even games for a tournament.

Cluster 6A has 48 students in it.

Cluster 6B has 44 students in it.

The teachers pose the dilemma to the students and Maria volunteers to figure out the teams. She needs to figure out how many teams to divide each cluster into and how many students will then be on each team. Maria has an idea how to do it. She knows that factors are going to be important. She just isn't sure how to make certain that each cluster is divided into the same number of teams.

You can help Maria with this dilemma by learning about Greatest Common Factors, commonly called GCF's.

**Pay close attention! At the end of the Concept you will be able to help Maria with the teams.**

### Guidance

In this Concept, you will be learning about the *greatest common factor* (GCF).

**What is the greatest common factor?**

**The greatest common factor is the greatest factor that two or more numbers have in common.** One way to find the GCF is to make lists of the factors for two numbers and then choose the greatest factor that the two factors have in common.

Find the GCF for 12 and 16.

**First, we list the factors of 12 and 16.**

| 12 | 16 |
|---|---|
| $12 \times 1$ | $16 \times 1$ |
| $2 \times 6$ | $8 \times 2$ |
| $\underline{4} \times 3$ | $\underline{4} \times 4$ |

**Next, we can underline the GCF, the largest number that appears in both lists.**

**The GCF is 4.**

That's all there is to it!

Now it is your turn to practice finding the GCF using a list. Make a list for each pair of numbers and then find the GCF of each pair.

**Example A**

**24 and 36**

**Solution: 6**

**Example B**

**10 and 18**

**Solution: 2**

**Example C**

**18 and 45**

**Solution: 9**

Now we can help Maria with the basketball dilemma. Let's go back and think about what we already know.

**We can use the greatest common factor for the 6A and 6B to find the number of teams for each cluster.**

| $6A = 48$ | $6B = 44$ |
|---|---|
| $48 \times 1$ | $44 \times 1$ |
| $24 \times 2$ | $22 \times 2$ |
| $12 \times \underline{4}$ | $11 \times \underline{4}$ |
| $6 \times 8$ | |

**The GCF of 48 and 44 is 4. The clusters can each be divided into 4 teams.**

**How many students will be on each team?**

6A - $48 \div 4 = 12$ students on each team

6B - $44 \div 4 = 11$ students on each team

**Now that we know about the teams, the students are ready to practice for the big basketball game!**

## Vocabulary

Here are the vocabulary words in this Concept.

**Factor**   a number multiplied by another number to get a product.

**Greatest Common Factor**   the greatest factor that two or more numbers has in common.

**Product**   the answer of a multiplication problem

## Guided Practice

Here is one for you to try on your own.

What is the GCF of 140 and 124?

**Answer**

140 has the following factors: 1, 140, 2, 70, 4, 35, 5, 28, 7, 20, 10, 14

124 has the following factors: 1, 124, 2, 62, 4, 31

**The GCF of these two numbers is 4.**
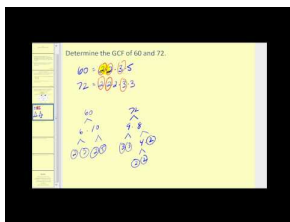
## Interactive Practice



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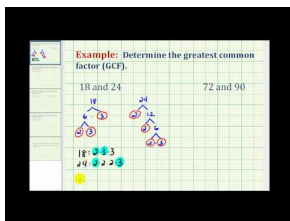> Click image to the left for more content.

## Video Review

Here are videos for review.



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James Sousa GreatestCommon Factor



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James Sousa Example of Determining the Greatest Common Factor

## Practice

Directions: Find the GCF for each pair of numbers.

1. 9 and 21

2. 4 and 16

3. 6 and 8

4. 12 and 22

5. 24 and 30

6. 35 and 47

7. 35 and 50

8. 44 and 121

9. 48 and 144

10. 60 and 75

11. 21 and 13

12. 14 and 35

13. 81 and 36

14. 90 and 80

15. 22 and 33

16. 11 and 13

17. 15 and 30

18. 28 and 63

19. 67 and 14

20. 18 and 36